L 08148-67
ACC NR: AP7001867

Studies ... Moscow State University (Department of High-Molecular-Weight Compounds) established that structures determining the properties of solid polymers are formed in melts, solutions and in the course of polymerization. These findings provide means for tailoring the structure and morphological forms of polymers directly in the course of formation of macromolecules.

Institutes of the Latvian and Belorussian Academies of Sciences are developing the theory of the strength of polymeric materials, and are compiling engineers' handbooks.

In conclusion, Sisakyan deplores the inadequate development of studies on the stabilization of polymers. [FSB: v. 2, no. 7]

SUB CODE: 07 / SUBM DATE: none

Card 5/5 nst

L 08162-67 EWT(m)/EWP(t)/EWP(t)/ETI IJP(c) DS/JD/RM

ACC NR: SOURCE CODE: UR/0030/66/000/003/0066/0067

AUTHOR: AP7001870 Sisakyan, N. M. (Academician; Chief scientific secretary of the Presidium; Deceased)

43
30
B

ORG: none

TITLE: [Soviet achievements in electrochemistry during 1965. Paper presented at the annual meeting of the Academy of Sciences USSR held in Moscow from 7 to 8 February 1966]

SOURCE: AN SSSR. Vestnik, no. 3, 1966, 66-67

TOPIC TAGS: electrochemistry, reaction kinetics, electrolysis, electrolyte

ABSTRACT:

Theoretical and applied research was carried out at twelve different institutions in the fields of the electrochemical reaction kinetics and adsorption of organic materials, of the electrical double layer on metals, electrolytic deposition of metals, electrolysis and electrophysical properties of molten salts, electrochemical synthesis, and fuel cells. The most noted achievements were as follows:

At Moscow State University (MGU) direct conversion of oxygen into water was found to occur concurrently with an indirect process, through hydrogen

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ACC NR: AP7001?70

peroxide, in electrochemical oxygen reduction on rhodium, gold, ruthenium, and platinum-ruthenium alloy in an acid electrolyte. The feasibility of electrochemical initiation of anionic polymerization of isocyanates to stereoregular polymers was shown at the Institute of the Chemistry of Macromolecular Compounds, AS UkrSSR.

A series of purification and concentration methods by electrodialysis was developed at the Institute of Physicochemical Processing of Mineral Raw Materials, AS USSR, Siberian Department. A joint study of the electrochemical oxidation of alcohols and hydrocarbons was completed by the Institute of Electrochemistry, AS USSR, by MGU, and by the Ministry of the Electrotechnical Industry USSR.

Studies on the theory of porous electrodes were made at the Institute of Electrochemistry, AS USSR, Physicochemical Scientific Research Institute, Dnepropetrovsk Institute of Chemical Technology, Odessa [State] University, and at the Institute of Heat- and Mass Transfer, AS BelSSR.

A theory of solid electrolytes and of fuel cells with solid electrolyte was developed by the Institute of Electrochemistry, AS USSR, Urals Branch.

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L 08[illegible]
ACC NR: [illegible]

The last two studies were connected with the development of fuel cells. Several unnamed organizations achieved a measure of success in developing active electrodes for low- and high-temperature fuel cells and in increasing their stability. - [FSB: v. 2, no. 7]

SUB CODE: 07 / SUBM DATE: none

Card 3/3 nst

L 08154-67 EWP(e)/EWT(m)/EWP(j)/EWP(t)/ETI IJP(c) JD/WW/JG/WB/RM/WR

ACC NR: AP7001871 SOURCE CODE: UR/0030/66/000/003/0068/0069

AUTHOR: Sisakyan, N. M. (Academician; Chief Scientific Secretary of the Presidium; Deceased)

ORG: none

TITLE: Soviet achievements in corrosion theory and corrosion prevention during 1965. Paper presented at the annual meeting of the Academy of Sciences USSR held in Moscow from 7 to 8 February 1966

SOURCE: AN SSSR. Vestnik, no. 3, 1966, 68-69

TOPIC TAGS: corrosion, corrosion inhibition, plastic coating, glass coating, ceramic coating

ABSTRACT:

At the Institute of Physical Chemistry and at other institutes, corrosion studies were directed toward a determination of the mechanism of metal passivation, corrosion inhibition and other prevention methods.

Based on nitro compounds, new types of atmospheric-corrosion inhibitors were prepared which are more generally applicable than existing methods. Full-scale production of this type of inhibitor has begun.

The new idea of modifying polymeric coatings with inhibitors, which makes it possible to improve protective properties and to produce new

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types of coatings, has been implemented.

At the Institute of Physical Chemistry, new alloys showing high stability in corrosive media were proposed. An experimental lot of one of these alloys was produced for large-scale testing in industry.

At the Institute of Chemistry, LatvSSR new compounds were developed and are undergoing bench tests, the so-called "corrosion-product converters," which make it possible to apply protective coatings (lacquers and paints) onto surfaces not subjected to preliminary treatment.

Experimental lots have been produced of new polymeric materials for protective coatings for metals; the materials exhibit high thermal stability (up to 400° C).

At the institutes of Organic Chemistry and of Physical Chemistry, a new effective method of treating titanium alloy products prior to application of galvanic coatings was developed.

At the Institute of Electrochemistry of the Urals Branch, AS USSR, in an attempt to elucidate the corrosion mechanism of metals in fused

L 08154-67
ACC NR: AP7001871

salts, the steady-state potentials of titanium, zirconium, iron, nickel, and palladium and the corrosion rates of these metals in fused chlorides and carbonates were determined.

At the Institute of Silicate Chemistry, coatings have been developed which afford long-time protection to niobium and molybdenum from atmospheric oxidation at up to 1700° C.

Methods of spray coating have been developed for applying low-porosity coatings, and for obtaining approximately 1-micron thick vitreous films, designed to protect semiconducting materials containing p-n junctions.

Flexible glass-ceramics coatings have been developed for the protection of chromel-alumel thermocouples operating at temperatures up to 1000° C. Organosilicon-derivatives of silicates, containing up to 9% carbon, which will be used as active components of new materials suitable for service under tropical conditions were prepared.

At the Institute of General and Inorganic Chemistry, AS UkrSSR, new corrosion inhibitors were prepared which are effective components of electrolytes for the electrochemical polishing of steel and chromium.

[Esb: v. 2, no. 7]
SUB CODE: 11 SUBM DATE: none
Card 3/3 nst

L 08145-67 EWT(l)/EWT(m)/EWP(t)/ETI/EWP(k)/EWA(c) JD/JH/JG/AP/RM

ACC NR: AP7001872 SOURCE CODE: UR/0030/66/000/003/0069/0070

AUTHOR: Siskayan, N. M. (Academician; Chief Scientific Secretary of the Presidium; Deceased)

ORG: none

TITLE: Soviet achievements in chemistry and technology of semiconductors, electrochemistry and surface properties of semiconductors and organic semiconductors during 1965. Paper presented at the annual meeting of the Academy of Sciences USSR held in Moscow from 7 to 8 February 1966

SOURCE: AN SSSR. Vestnik, no. 3, 1966, 69-70

TOPIC TAGS: polycrystalline film, semiconductor material, rare earth metal, photoconductivity, dipole moment

ABSTRACT:

At the Institute of Metallurgy thermal decomposition in the gas phase has been used to prepare high-temperature semiconducting aluminum nitride in the form of polycrystalline films and small single crystals.

At the Moscow Institute of Steel and Alloys, the Physico-Technical Institute, the Institute of Semiconductors, AS UkrSSR, and at Moscow State University preparative and doping methods have been developed for

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compound semiconductors of the $A^{III}B^{V}$ and $A^{II}B^{VI}$ types, and more complex ternary compound semiconductors for electronics.

At Moscow State University, the thermodynamic properties of the principal semiconducting materials were determined. Vapor pressure in the PbS-PbTe, PbTe-SuTe systems, the vapor pressure of tellurium, and the partial pressure of germanium above the Ge-Si melt were measured. This makes it possible to improve the production technology of semiconducting materials of practical significance.

At the Physicotechnical Institute, preparative methods were developed for single crystals of $A^{II}B^{IV}C_2^{V}$ ternary compounds.

At the Institute of Physical Chemistry, AS AzerSSR, the chemistry of a number of semiconducting compounds of gallium with chalcogenides and rare earth elements was studied. Based on these compounds, new semiconducting compounds were prepared in the form of poly- or single crystals.

At Giredmet (State Institute of Raw Metals) and at the institutes of Semiconductors and of General and Inorganic Chemistry, new preparative

methods were developed for high-purity rare-earth elements and compounds thereof, many of which are semiconductors for high-temperature applications. 6

At Moscow State University and Giredmet, new methods of determining micro amounts of impurities in semiconducting and high-purity materials by activation, mass-spectroscopic, and polarographic analyses were developed and improved.

At the Institute of Semiconductor Physics, Siberian Department, a new preparative method for preparing a stabilizing germanium monosulfide film on the surface of germanium was developed, as well as a method for etching germanium in hydrogen disulfide to produce a mirror-like surface. By measuring the field effect and the effective lifetime of excess carriers, it was shown that the film-covered surface of germanium exhibits stable parameters whose value varies within 20% on vacuum heating to 650°K and exposure to water vapor.

By means of infrared surface photoconductivity, the energy spectrum of surface states on germanium was determined. The spectral and temperature dependence of photoconductivity and its relaxation properties were measured. A method was proposed for interpreting the results and

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ACC NR: AT7001872

of the surface of germanium was studied.

The effect of an external electric field on the adsorption and catalytic properties of a semiconductor was calculated.

The shift in the adsorption equilibrium on the surface of a semiconductor due to illumination was studied.

At the Institute of Semiconductors, negative surface photoconductivity was discovered in germanium and silicon. Conditions for the existence of negative surface conductivity and factors causing its appearance were established.

A project concerned with the investigation of the effect of heat treatment on the electronic structure of silicon was completed.

At the Institute of Electrochemistry, irradiation coupled with heat treatment of poly(vinyl acetate) produced conjugated structures having a high degree of regularity and showing semiconducting properties.

At the Institute of Petrochemical Synthesis, charge-transfer complexes based on polymeric Schiff bases and polyazines (electron donors)

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L 06142-67 EWT(m) IJP/WB/RM

ACC NR: AP7001873 SOURCE CODE: UR/0030/66/000/003/0070/0071

AUTHOR: Sisakyan, N. M. (Academician; Chief Scientific Secretary of the Presidium; Deceased)

ORG: none

TITLE: Soviet achievements in adsorption and chromatography during 1965. Paper presented at the annual meeting of the Academy of Sciences USSR held from 7 to 8 February 1966

SOURCE: AN SSSR. Vestnik, no. 3, 1966, 70-71

TOPIC TAGS: chromatography, macromolecule, adsorption, zeolite

ABSTRACT:

The following achievements were noted at the Institute of Physical Chemistry, AS USSR: 1) development of the theory of bulk filling of micropores was extended to the case of adsorption on various adsorbents and on adsorbents with a complicated porous structure, to effective classification of adsorbent types, and to generalization of methods of analysis of the porous structure of adsorbents; 2) development of a method of deposition of a dense layer of macromolecules on an adsorbing support makes it possible to combine the advantages of gas and fluid chromatography.

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ACC NR: AR7001873

At the Institute of Heteroorganic Compounds, AS USSR, the possibility was shown for separation of racemic forms on optically active ion exchange resins. [FSB: v. 2, no. 7]

SUB CODE: 07 / SUBM DATE: none

Card 3/3 nst

L 08151-67 EWP(e)/EWT(m)/EWP(j)/EWP(t)/ETI IJP(c) JD/WW/JW/JG/AT/RM/WH

ACC NR: AP7001874 SOURCE CODE: UR/0030/66/000/003/0073/0074

AUTHOR: Sisakyan, N. M. (Academician; Chief Scientific Secretary of the Presidium; Deceased)

98
60
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ORG: none

TITLE: Soviet achievements in organic chemistry during 1965. Paper presented at the annual meeting of the Academy of Sciences USSR held in Moscow from 7 to 8 February 1966

SOURCE: AN SSSR. Vestnik, no. 3, 1966, 73-74

TOPIC TAGS: rare earth metal, luminescence spectrum, chelate compound, refractory metal, metal coating, pyroceram, corundum, metal deposition

ABSTRACT:

Significant studies were undertaken by at least 17 different institutions in connection with the development of materials or quantum electronics, ferro- and piezoelectric, semiconducting, and thermally stable materials.

In the field of quantum electronics over 50 new substances with intense energy transfer to activator ions were synthesized and studied from the viewpoint of their application as laser materials. The mechanism of

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ACC NR: AP7001874

energy transfer in vitreous and liquid materials was substantiated both experimentally and theoretically. Studies were made of the absorption and luminescence spectra of europium-activated sodium borate glasses and of the optical properties of lanthanum, neodymium, terbium, and dysprosium orthoborate single crystals grown from fluxed melts.

The following materials were prepared, which are of practical importance for quantum electronics:

cubic single crystals of bismuth titanate (Institute of General and Inorganic Chemistry, AS USSR); lead selenide single crystals (MGU); new rare-earth element tantalates, niobates, and tungstates (at an unnamed institution); and new rare-earth element complexes with tropolone derivatives (Institute of General and Inorganic Chemistry, AS UkrSSR). In addition, at the last-mentioned institute, sensitized luminescence was detected in europium chelates and kinetic data were obtained for the first time on the formation of rare-earth complexes.

A series of piezomagnetic compounds of the barium titanate type with a high transition point was synthesized at the Physicochemical Scientific Research Institute.

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ACC NR: AP7001874

At the Institute of New Chemical Problems, AS USSR, a correlation was found between the electronic and thermodynamic parameters of a semiconductor crystal, and a "chemical" model of conduction electrons in diamond-type crystals was proposed.

The most important results in the field of new thermally stable materials included:

Crystallization of fused quartz glass was found to be of a chemical (not relaxational) nature and physicochemical fundamentals were developed of spray-coating refractory steel, alloys, and carbographitic materials with new type fire-resistant inorganic materials at the Institute of Silicate Chemistry, AS USSR; pyroceram (sitall) base materials, stable at high temperature, with special stable dielectric characteristics, new dielectrics for high vacuum and high voltage service, and capillary sitalls for heat-exchangers were developed at the State Institute of Glass;

New heat-resistant and transparent to infrared radiation, polycrystalline materials consisting of rare-earth and earth-alkali element fluorides were prepared and new heat-resistant dielectric materials based on hexagonal boron nitride and aluminum nitride were developed at unnamed institutions;

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Vacuum-tight corundum ceramic, with satisfactory strength and dielectric characteristics, and polycrystalline corundum ceramic highly transparent to 0.3–0.4 μ radiation were developed at the Ukrainian Institute of Refractories;

A method was proposed for obtaining periclase single crystals for heating elements and boron carbide-base volume resistance elements were prepared for new technological application under extreme temperature conditions, both at the Institute of the Science of Materials, AS UkrSSR;

A boron nitride variety, harder than diamond, was obtained at a branch of the Institute of Chemical Physics, AS USSR;

New-type refractory materials, niobium, tantalum, and tungsten oxynitrides, of lamellar structure, were synthesized at the Institute of General and Inorganic Chemistry, AS USSR; and

Methods of depositing metallic, carbide, and nitride protective coatings on carbon and graphite, also of depositing refractory metal and alloy coatings in vacuum or from halogenide vapors were developed at the

FSB: v. 2, no. 7]

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L 08146-67 EWT(m)/EWP(j)/EWP(t)/ETI IJP(c) JD/JG/RM

ACC NR: AP7001875 SOURCE CODE: UR/0030/66/000/003/0074/0075

AUTHOR: Sisakyan, N. M. (Academician; Chief Scientific Secretary of the Presidium; Deceased) 47 33

ORG: None

TITLE: Soviet achievements with pure substances and trace analysis during 1965. Paper presented at the annual meeting of the Academy of Sciences USSR held in Moscow from 7 to 8 February 1966

SOURCE: AN SSSR. Vestnik, no. 3, 1966, 74-75

TOPIC TAGS: trace analysis, germanium compound, chelate compound, semiconducting material

ABSTRACT:

The following were the most important high-purity substances prepared for the first time: niobium containing less than 10^{-5}% Ta_2O_5; europium oxide containing 1.6×10^{-5}%; and ytterbium oxide containing less than 10^{-4}% of other rare earths.

In addition, methods of preparation were developed for the following high-purity compounds:

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germanium tetrachloride containing $10^{-7}-10^{-8}$% and silicon monoxide containing $10^{-2}-10^{-3}$% of a given impurity; technically important alkali niobates, phosphates, and fluorides; and trichlorosilane, containing $10^{-7}-10^{-9}$% impurities (the latter at the All-Union Scientific Research Institute of Chemical Reagents and High-Purity Substances).

In the field of separation and concentration of rare elements, new theories of extraction of chelates were developed at the Institute of Geochemistry and Analytical Chemistry, AS USSR and studies were made on the chemistry of protactinium.

New methods of concentration and determination of trace elements in high-purity substances were developed for: up to 0.05 μ/ml Nb, Zr, Sc, Mo, V, Th, U, Pa, and Pu in metals, nuclear materials, etc., by means of new organic reagents; chromium in ruby and five alloying elements in SiC by application of a 10 j laser to analysis of hard solids; tin in indium by a highly sensitive method; individual rare-earth elements by fluorimetry; and alkali metals, zinc, and cadmium by new radiometric-adsorption techniques (at the Institute of General and Inorganic Chemistry, AS UkrSSR).

The sensitivity of direct spectroscopic analytical techniques was increased by several orders of magnitude. Over 40 new analytical pro-

L 08165-67 EWT(m)/EWP(j) RM

ACC NR: AP7001876 SOURCE CODE: UR/0030/66/000/003/0090/0090

AUTHOR: Sisakyan, N. M. (Academician; Chief Scientific Secretary of the Presidium; Deceased)

45
39
B

ORG: none

TITLE: Soviet achievements in photosynthesis during 1965. Paper presented at the annual meeting of the Academy of Sciences USSR held in Moscow from 7 to 8 February 1966

SOURCE: AN SSSR. Vestnik, no. 3, 1966, 90

TOPIC TAGS: biochemistry, plant chemistry, biophysics, photosynthesis, chlorophyll, biosynthesis, electron transfer

ABSTRACT:

Special attention was given to the study of the biochemistry and biophysics of the photosynthesis process on the molecular level. Studies of the excited states of chlorophyll molecules or molecules of its analogs indicated initial stages of the interaction of photosynthesis pigments with electron donors or acceptors, thus determining the mechanism of chlorophyll action. These studies were completed at the institutes of Biochemistry Biophysics, Geochemistry, and Analytical Chemistry of the Academies of

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ACC NR: AM6001053 Monograph UR/

Sisakyan, N. M. (Academician), ed.

Second group space flight and some results of the flight of Soviet cosmonauts in "Vostok" spaceships; scientific results of medical and biological research conducted during the second group space flight (Vtoroy gruppovoy kosmicheskiy polet i nekotoryye itogi poletov sovetskikh kosmonavtov na korablyakh "Vostok"; nauchnyye rezul'taty mediko-biologicheskikh issledovaniy, provedennykh vo vremya vtorogo gruppovogo kosmicheskogo poleta) [Moscow] Izd-vo "Nauka", 1965. 227 p. illus., biblio. 3500 copies printed.

TOPIC TAGS: space medicine, weightlessness, space biologic experiment/ Vostok-5, Vostok-6

PURPOSE AND COVERAGE: none

TABLE OF CONTENTS [abridged]:

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Preflight examination of astronauts -- 28

Results of medical examination in flight -- 89

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Card 1/2 UDC: 613.693:629.195-2

ACC NR: AP7001877 SOURCE CODE: UR/0030/66/000/003/0015/0019

AUTHOR: Sisakyan, N. M. (Academician; Chief Scientific Secretary of the Presidium; Deceased)

37
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B

ORG: none

TITLE: Soviet achievements in mathematics during 1965. Paper presented at the annual meeting of the Academy of Sciences USSR held in Moscow from 7 to 8 February 1966

SOURCE: AN SSSR. Vestnik, no. 3, 1966, 15-19

TOPIC TAGS: boundary value problem, eigenvalue, topology, function theory, geometry, partial differential equation, probability, numeric analysis

ABSTRACT:

In 1965, important results were obtained in the following branches of modern mathematics and its applications:

Logic and Foundations. The decidability of elementary theories of a wide class of normed fields has been proved. Soviet mathematicians also proved the decidability of elementary theories of every p-adic field at the same time as American mathematicians, but employed different methods (Institute of Mathematics, Siberian Branch, Academy of

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Sciences USSR). An exact formal language was created for describing the performance of computers which have no parallel working devices (Computing Center, Academy of Sciences USSR).

Algebra. It has been shown in the theory of ordered groups that the order of the group of automorphisms of an ordered group can be finite and distinct from power-two order. Ordering groups which have no ordering completions have been constructed (Institute of Mathematics, Siberian Branch, Academy of Sciences USSR). The problem of the unimodular equivalence of two systems of integral matrices has been solved (Institute of Mathematics, Academy of Sciences USSR, Leningrad Branch).

Analytic Number Theory. Two important studies have been completed: a) Important results have been obtained in the additive theory of numbers. The method applied in this study is related to the methods of the theory of dynamic systems and to the methods of trigonometric sums (Institute of Mathematics, Academy of Sciences USSR, Leningrad Branch; Kuybyshev Pedagogical Institute). b) This study deals with asymptotic formulas in the eigenvalue problem of the boundary-value problem. The Weil hypothesis has been proved in the domain where the separation of

variables of the boundary-value problem is possible. The results are interesting because methods of analytic number theory have been applied in solving the problem (Institute of Mathematics, Academy of Sciences USSR).

General Topology. The question of the dimension of the so-called growth of the bicompact extension of a given topological space and of a given proximity space has been clarified (Institute of Mathematics, Academy of Sciences USSR; Moscow State University). The problem of P. S. Aleksandrov, formulated in 1935, has been solved: it is proved that Borel sets of the perfectly normal bicompactum are nonempty (Moscow State University).

Algebraic Topology and Geometry. The topological invariance of rational characteristic classes has been proved (Institute of Mathematics, Academy of Sciences USSR). The criterion of imbedding of a compact analytic manifold in projective space has been established (Orekhovo-Zuy'evskiy Pedagogical Institute). The most important studies in geometry were concerned with problems linked with the theory of partial differential equations (especially nonlinear). The deformation of a closed convex surface depending on changes of its

intrinsic metric have been estimated. This means that the problem formulated 30 years ago by Cohn and Vossen has been solved (Leningrad State University). Studies of surfaces with negative curvature and hyperbolic equations (and systems) with two variables respectively have been successfully continued. It has been proved that any compact domain and some infinite domains with negative curvature can be realized in the form of a regular surface (Moscow State University).

Theory of Functions. The most natural characteristics and parametric representations of a series of wide classes of meromorphic functions in a circle or in the entire plane have been derived by extending the method of integral representation developed by M. M. Drzhbashyan. The same methods have been successfully applied to obtain representations for subharmonic functions in spaces with an arbitrary number of dimensions. An interesting theorem concerning the defects of finite-order entire functions has been proved which rejects the known R. Nevanlinna hypothesis on the defects of entire functions. In the theory of orthogonal series, an exact estimate (in a certain sense) of coefficients of orthogonal zero-series has been derived for the first time. It has been proved that any complete system turns, after certain permutations, into a weakly convergent system (Armenian Academy of Sciences). New important refinements of the embedding theorems of

a class of functions have been obtained which make it possible to obtain an exact solution of the problem concerning the number of derivatives of initial data required to ensure the existence of classical solutions of hyperbolic equations (Institutes of Mathematics of the Academy of Sciences USSR and of its Siberian Branch). A new and unexpected solution of the known problem concerning the characteristics of sets in the space over which an arbitrary continuous function is arbitrarily close to a certain harmonic function has been obtained (Institute of Mathematics, Academy of Sciences USSR). A complete solution of the problem of the uniform approximation of continuous functions by rational functions has been derived (Institute of Mathematics, Academy of Sciences USSR). A study concerned with determining the necessary and sufficient conditions ensuring the convergence of Fourier series in a Haar system has been completed (Moscow State University and Institute of Mathematics of the Academy of Sciences USSR).

Functional Analysis. Degenerate symmetric algebras of operators in Pontryagin's space have been studied, models of them have been constructed, and the equivalence condition of two models has been obtained (Institue of Mathematics, Academy of Sciences USSR).

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Partial Differential Equations. The first boundary-value problem for partial differential equations which degenerates on the boundary as well as in the interior of the domain has been analyzed. A correct formulation of the first boundary-value problem for such equations has been given and its single-valued solvability has been proved (Moscow State University). Mixed boundary-value problems for a wide class of systems of parabolic equations have been investigated. Estimates of the solution in terms of the right-hand sides of equations have been derived (Institute of Mathematics, Academy of Sciences USSR, Leningrad Branch). Partial differential equations in space with various boundary conditions have been studied. For uniform systems of second-order elliptic equations, the effect of coefficients of lower-order derivatives upon the normal solvability of Dirichlet and Poincaré problems has been established (Institute of Mathematics, Academy of Sciences USSR, Siberian Branch).

Ordinary Differential Equations. The application of the maximum principle to problems where phase coordinates are constrained by certain inequalities is considered as the most important result obtained in this field (Institute of Mathematics, Academy of Sciences USSR).

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Probability Theory and Mathematical Statistics. The possibility of substantiating probability theory on the basis of finite sequences of trials in which the minimal length of the program for their determination is equal to the double logarithm of the number of elements in the sequence has been studied. Using this point of view, only the simplest sequences conforming to the Bernoulli scheme with probabilities equal to 1/2 have been considered (Moscow State University). In the field of limit theorems for functionals of random walks, it has been proved that general continuous Markov processes represent continuous models of processes derived from diffusion processes (Institute of Mathematics, Academy of Sciences USSR). Important results have been obtained in solving the problem of making the classical limit theorems more effective; by applying electronic computers to theoretical concepts, it was determined that Lyapunov's constant $C \leq 1.322$ (previously, it was believed that $C \leq 4.8$). Effective necessary and sufficient conditions for the equivalence of two Gaussian measures have been derived (Institute of Mathematics, Academy of Sciences USSR).

Mathematical Methods in Theoretical Physics. Important results have been obtained in developing new methods for solving problems of theoretical physics by utilizing integral transformations and integral equations. A new approach to the solution of integral equations with

ACC NR: AP7001877

the kernel depending on the absolute value of the difference of arguments and on the finite interval of variables has been investigated. It is shown that under sufficiently general conditions, such equations can be solved by means of quadratures when the solution of the so-called "key" problem is known (Physicotechnical Institute, Academy of Sciences USSR). Studies of the stability of plasma in magnetic and gravitational fields were continued. It is shown that in the case of a plasma cylinder in a strong longitudinal magnetic field upon which a small high-frequency component of the same field is superposed, a quickly developing oscillatory instability can arise (Joint Institute for Nuclear Research). The derived relationships and the absolute values of magnetic moments and form-factors of elementary particles in the SU_6 symmetry are considered to be very important results. The first more or less satisfactory microscopic theory of galvanoelectricity has been developed. Significant results have also been obtained in the theory of ideal Bose gases (Institute of Mathematics, Academy of Sciences USSR).

Mathematical Methods in Mechanics. The stability of steady states of a continuous medium which are uniform in the direction of one variable has been studied. A new version of the theory of shells has been developed which, in contrast to the classical theory of shells, is not based upon supplementary hypotheses that do not follow from the fundamental

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principles of the strength of materials; a system of differential equations fully consistent with physical boundary conditions has been constructed (Institute of Mathematics, Georgian Academy of Sciences).

Numerical Analysis. Stable methods for determining the normal solutions of degenerate systems of equations and new algorithms for solving the complete eigenvalue problem have been proposed (Institute of Mathematics, Academy of Sciences USSR, Leningrad Branch; Moscow State University). The problem of correctness of a series of inverse problems of mathematical physics has been studied and new methods for solving them have been proposed. A series of new criteria of the effectiveness and of the optimality of algorithms for solving incorrect problems have been obtained (Computing Center, Academy of Sciences USSR, Siberian Branch). Generalization and extension of the alternating directions method to the numerical solution of more general forms of partial differential equations is considered an essential achievement in numerical analysis. Interesting results have been obtained in studying the principle of "frozen coefficients". Essential results have been obtained in solving incorrect problems pertaining to operator equations of the first kind, linear algebra, linear programming, optimal control, and also to equations with stochastic right-hand sides (Institute of

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ACC NR: AP7001877

Mathematics, Academy of Sciences USSR, Siberian Branch; Moscow State University). Some results have been obtained in the theory of incorrectly formulated problems of mathematical physics. A wide range of incorrectly formulated problems pertaining to the most diverse fields of mathematics and their applications have been studied (Moscow State University; Institute of Mathematics, Academy of Sciences USSR). In the theory of optimal control, new methods for determining the optimal control for various systems and processes, in particular for processes which are not completely described, have been developed (Institute of Mathematics and Computing Center, Academy of Sciences USSR). Numerical algorithms for solving a many-dimensional nonlinear system of equations which describe the flow of gases, in particular flows with their physicochemical properties taken into consideration, have been substantially developed and used in practice (Institute of Mathematics, Computing Center, and Physicotechnical Institute, Academy of Sciences USSR). New computation algorithms for solving weather forecasting problems (Computing Center, Academy of Sciences USSR, Siberian Branch) and two-dimensional plasma problems (Institute of Mathematics, Academy of Sciences USSR) have been formulated and constructed.

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L 08161-67

ACC NR: AP7001877

Mathematical Methods in Economics and Operations Research. Extensive studies on numerical methods for solving problems of mathematical programming have been continued. A series of important results have been obatined in linear programming, nonlinear programming, and PERT systems. [FSB: v. 2, no. 6]

SUB CODE: 12 / SUBM DATE: none

L 08143-67 EWT(d)/EWT(m)/EWP(j)/EWP(t) IJP(c) BB/WW/GG/RM

ACC NR: AP7001858 SOURCE CODE: UR/0030/66/000/003/0035/0040

AUTHOR: Sisakyan N. M. (Academician; Chief Scientific Secretary of the Presidium; Deceased)

ORG: none

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TITLE: Soviet achievements in cybernetics during 1965. Paper presented at the annual meeting of the Academy of Sciences held in Moscow from 7 to 8 February 1966

SOURCE: AN SSSR. Vestnik, no. 3, 1966, 35-40

TOPIC TAGS: cybernetics, digital automaton, computer design, algorithm, computer language

ABSTRACT: 160

Studies of the complex problem "Cybernetics" covered the problems of the theoretical foundations of cybernetics, development of its hardware, and also the application of the ideas, methods, and the hardware of cybernetics to various fields of the national economy and science.

Theoretical Problems of Cybernetics. Studies concerned with developing optimal methods for the analysis and synthesis of control systems have been completed. The problem of the minimal disjunctive normal forms for almost all functions of the logic algebra has been

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studied in detail. A series of interesting results in the theory of optimal coding have been obtained (Institute of Mathematics, Academy of Sciences USSR, Siberian Branch). Methods have been developed for the structural synthesis of optimal circuits of digital automata with the physical properties of their elements taken into consideration. A formal language for describing the algorithms and principles of constructing systems for automatic design of electronic computers, structural microprogramming of data processing algorithms, and the principles of designing information automata, and also input and computer languages were developed (Institute of Cybernetics, Ukrainian Academy of Sciences). Self-adjusting systems (finite automata) operating under conditions not known in advance have been constructed. A self-adjusting system for prediction and filtration of stationary processes has been developed. A broad class of stochastic learning models has been determined and their asymptotic properties studied (Computing Center, Academy of Sciences USSR). In the theory of relay systems and finite automata, a cycle of studies of the abstract synthesis of control systems for distributing information has been completed. Methods for block and abstract syntheses of microprogram automata, a method for minimizing the number of internal states of incompletely defined automata, and methods for coding the internal states have been developed (Institute on Infor-

mation Transmission Problems, Academy of Sciences USSR). Methods for automatic analysis of cyclic codes, for correcting errors, and for constructing noise-stable codes with variable redundancy for automatic optimization of the information transmission process in channels with slowly varying parameters have been proposed (Scientific Council on Cybernetics and Institute on Information Transmission Problems, Academy of Sciences USSR). The development of logical foundations for designing highly productive computing systems, of methods for their simulation on electronic computers, and also of methods for solving various problems by means of such computing systems has been completed (Institute of Mathematics, Academy of Sciences USSR, Siberian Branch). A mathematical model of digital measuring and controlling devices has been developed which serves as a basis for deriving formulas for estimating the speed, efficiency, and complexity of measuring and controlling systems. Calculation formulas for determining quantization steps during the measurement of randomly varying values have also been derived (Institute of Automation and Electrometry, Academy of Sciences USSR, Siberian Branch).

Hardware of Cybernetics. A new industrial computer for solving engineering problems has been tested and turned over to the State

ACC NR: AP7001858

Commission. A digital computer with a universal programming language for solving problems of the national economy and other computing problems has been designed. The theory of quasi-analog mathematical machines has been developed further. This theory served as the basis for designing electronic self-adjusting computers for solving differential equations and a special-purpose electronic analog computer for solving PERT systems (Institute of Cybernetics, Academy of Sciences USSR). Instrumental and methodical errors have been theoretically analyzed in the field of correlation and information systems. A series of automatic correlators has been developed (Institute of Automation and Electrometry, Academy of Sciences USSR, Siberian Branch). A measuring system for studying the dynamics of the blood and permitting control of as many as 25 variables simultaneously has been developed. Methods and devices for studying the dynamic characteristics of the heart and a program for interpreting ECG's on an electronic computer have been developed (Institute of Cybernetics, Academy of Sciences USSR). An automatic system for quick determination of the area of burns (Patented in foreign countries) has been constructed (Institute of Surgery, Academy of Medical Sciences USSR). Devices for reading information concerning the pulse and continuous electric activity in tissues and cells into electronic digital computers have been developed. A series

of programs has been written for various ways of processing physiological experimental data (Institute of Biophysics, Academy of Sciences USSR).

Application of the Methods and Hardware of Cybernetics to the National Economy and Scientific Research. Methods, algorithms, and programs have been developed for solving the following problems of the national economy: planning, distribution of production and material supplies, optimal planning of such objects as railroads, gas lines, and voltage transmission lines, design of PERT systems, planning of transportation and electric power systems (Institute of Cybernetics, Academy of Sciences USSR; Computing Center, Academy of Sciences USSR, Siberian Branch; and others). Cybernetics has been applied successfully to the solution of various chemistry problems. A new method for processing a priori information concerning chemical processes on the basis of nonparametric statistics, new methods for processing the random balance, and computer algorithms for the random balance method have been proposed. General principles for mathematical description and simulation of chemical processes based on the kinetic mass- and heat-exchange equations have been developed. Concrete studies have been aimed basically at developing mathematical

models of catalytic processes (Institute of Cybernetics; Computing Center, Academy of Sciences USSR, Siberian Branch). In the field of developing and improving formal languages for recording chemical information, a series of methods for automatic and semiautomatic indexing of chemical information and for compiling reference indexes have been developed and realized on the Ural 4 computer (Information Center, Academy of Sciences USSR).

Applications of Cybernetics in Biology and Medicine. Theoretical and experimental studies of the properties of visual analyzers and the role of the motions of the eye during visual activities have been carried out. The vision of insects and the functions of the retina in vertebrates and invertebrates have been studied (Institute on Information Transmission Problems, Academy of Sciences USSR). A mathematical model of the oculomotor apparatus and the system for controlling it has been developed (Computing Center, Academy of Sciences USSR). The structure of the respiratory center controlling the respiratory movements and the system controlling the posture and the movements of men and animals have been studied. Experimental data characterizing the activity of inspiratory-expiratory neurons of the medulla oblongata have been obtained and their interactions have been established. Uti-

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lizing the properties of real neurons, a model describing the respiratory rhythm has been constructed (Institute of Biophysics, Academy of Sciences USSR). A hypothesis concerning the organization and functioning of the system which controls physiological processes has been developed. To verify certain aspects of this hypothesis, particular parts of the control systems have been simulated by electronic computers (Institute of Surgery, Academy of Medical Sciences USSR). The development of theoretical foundations for simulating the control processes in organisms has been continued. The construction of an experimental static model of the heart action which describes the object with the error not exceeding ± 10% has been completed. A model of the cardiac diastole has been constructed and its behavior has been analyzed. A qualitative model of the heart action which takes account of the diastolic tonus has been developed (Institute of Cybernetics, Academy of Sciences USSR). An algorithm for observing time intervals has been developed and realized in the form of a program for an electronic computer (Institute of Higher Nervous Activity and Neurophysiology, Academy of Sciences USSR). The principles of machine diagnostics and therapy have been developed on the basis of a pattern recognition algorithm. These principles have been applied in the therapy of burns and in operations on burned skin (Institute of Surgery, Academy of Medical Sciences

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USSR). Studies on developing diagnostic and information systems for neurosurgical diseases and, in particular, for injuries of the cranium and of the brain have been continued. A system for automatic input into computers of information obtained from studying patients with the aid of radioactive isotopes has been constructed. A system for differential diagnosis of clinical forms of closed injuries of the cranium and of the brain has been developed and studied (Leningrad Scientific Research Institute of Neurosurgery). [FSB: v. 2, no. 6]

SUB CODE: 06,09 / SUBM DATE: none

Card 8/8 nst

AUTHORS: Zalashkova, M.Ye., Lizunov, M.V. and Sitnin, A.A. SOV-132-58-8-3/16

TITLE: Experience With the Metallometric Surveying of Beryllium in the Region of Beryllium Bearing Pegmatites Covered with Sediments (Opyt Metallometricheskoy s"yemki na berilliy v rayone razvitiya berillonosnykh pegmatitov zakrytykh nanosami)

PERIODICAL: Razvedka i okhrana nedr, 1958, Nr 8, pp 9-14 (USSR)

ABSTRACT: Metallometric surveying methods, coupled with spectral analysis, were applied by the author while prospecting for beryllium sediments. According to A.Ye. Fersman (ref 5) beryllium has slow migratory properties under hypogenic conditions and A.A. Beus (ref. 1 and 2) stresses that beryllium can easily be trapped in dispersed and colloidal systems near its source, because of its high ionic potential. A region where the beryllium bearing pegmatites were covered with a thick alluvial layer, was chosen for the experiment. The magnitude of alluvial layers varied from 0.5 to 0.7 m on elevated places, and reached 2 m and more on the slopes. Pegmatite formations were found among metamorphic micaceous slates extending in a north-easterly direction. Metallo-

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metric surveying was conducted on lines traced across the pegmatite belt. Samples were taken from depths of 20-25 cm from soil and subsoil layers. Spectral analysis was then used in testing of samples. The operation is described in detail. It was also found that in the samples taken from depths of 50-70 cm no trace of beryllium was found. The results of metallometric surveying were plotted on a map. This map also showed all pegmatite veins as peaks, clearly defining the aureoles with increased contents of beryllium. Moreover, tests were made in analyzing ashes from trees taken from the sectors where beryllium deposits were found. It was found that beryllium was mainly concentrated in the leaves and to a lesser degree, in the roots of those trees. The presence of the beryllium, mainly in the soil and subsoil layers, could be thus explained by the role of trees which help to transport beryllium from the depth and then deposit it in the upper layers of the earth. Consequently,

Experience With the Metallometric Surveying of Beryllium in the Region of Beryllium Bearing Pegmatites Covered with Sediments SOV-132-58-8-3/16

the examination of ashes of trees growing in the regions of beryllium bearing pegmatites could help to locate beryllium deposits. There is 1 map, 1 table and 5 Soviet references.

ASSOCIATION: IMGRE

1. Beryllium--Avaiability 2. Beryllium--Sources 3. Beryllium --Test results 4. Spectrographic analysis--Applications

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S/081/60/000/010/005/009
A166/A129

AUTHORS: Sitnin, A.A.; Sazhina, L.I.

TITLE: The content of rubidium in beryls

PERIODICAL: Referativnyy zhurnal. Khimiya, 1960, no. 10, 102, abstract 38238. (Tr. in-ta mineralogii, geokhimii i kristallokhimii redk. elementov AN SSSR, 1959, no. 2, 84 - 86)

TEXT: The quantitative spectral method was used to study the distribution of Rb in 22 samples of beryl from various granite pegmatites and greisens in the USSR. In addition chemical methods were used to determine Na, K, Cs and Li. It was found that the quantity of Rb in beryls of various genesis varied from 0.0025 to 0.13% (predominantly n. 10^{-3}%). The Rb concentration rose from early non-alkali beryls (0.006%) to the later Na-Li- (up to 0.04%) and Li-Cs-varieties (up to 0.13%). Analysis showed that Rb also accumulates in associated K-minerals (muscovite, microcline, siderophyllite) in amounts of up to 0.003 - 0.3%, i.e., 10 - 100 times more than its content in beryls.

[Abstracter's note: Complete translation] G.V.

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S/007/60/000/004/002/005
B002/B055

AUTHOR: Sitnin, A. A.

TITLE: Distribution of rare elements in the amazonite granites of the Etyka Massif (Eastern Transbaikal region)

PERIODICAL: Geokhimiya, no. 4, 1960, 305-314

TEXT: The present work is a study of the distribution of the rare elements Li, Rb, Be, Ga, Tl, Nb, and Ta in the amazonite granite, contact zones and greisen formations of Etyka, Kukul'beyskiy Range, Eastern Transbaikal region. V. M. Shvets and N. Korotkova carried out the total analyses, N. Pakhomova, B. Volkov, L. Buromskaya, and S. B. Fedorova the chemical determinations of Be, Ga, Tl, Nb and Ta under the supervision of V. S. Saltykova; A. Isayeva and G. Popova the flame-photometric determinations of Li, Rb and K under the supervision of Ye. A. Fabrikova; and L. I. Serdobova and N. Rodionova the quantitative spectroscopic determination of Be under the supervision of N. V. Lizunov. The amazonite granite of Etyka consists of phenocrysts of quartz (20%) and amazonite (21%) in a

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BEUS, A.A.; SITNIN, A.A.

Granites containing microlites are a new promising type of deposits of tantalum. Razved. i okh. nedr 26 no.10:1-4 O '60.
(MIRA 13:11)

1. Institut mineralogii, geokhimii i kristallokhimii redkikh elementov AN SSSR.

(Granite) (Tantalum) (Microlite)

S/007/61/000/003/001/004
B107/B206

AUTHORS: Beus, A. A., Sitnin, A. A.

TITLE: Geochemistry of tantalum and niobium in the hydrothermal-pneumatolytic process

PERIODICAL: Geokhimiya, no. 3, 1961, 209-214

TEXT: The geochemical behavior of tantalum and niobium, specially in pneumatolytic-hydrothermal deposits, has not been sufficiently clarified yet. A. Ye. Fersman stated (Ref. 1: A. Ye. Fersman, Geokhimiya (Geochemistry), v. 4, Izd. AN SSSR, M., 1939) that niobium and tantalum did not enter into pneumatolysis, which opinion is shared by A. I. Ginzburg. Contrary to that, the authors come to the following conclusions based on their own investigations especially in Eastern Siberia: Tantalum and Niobium are characteristic elements of high temperature-, postmagmatic processes which are connected with granites. Their geochemical history can be followed from the state of early sodium metasomatism (early albitization) over greisenization up to the formation of high temperature quartz veins. Owing to the peculiarities of postmagmatic metasomatism two types of granites can be distinguished with

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SITNIN, A.A.; LEONOVA, T.N.

Find of strüverite in exomorphic greisens of a granite massif in Eastern Siberia. Dokl. AN SSSR 137 no.3:685-687 Mr '61. (MIRA 14:2)

1. Institut mineralogii, geokhimii i kristallokhimii redkikh elementov AN SSSR. Predstavleno akademikom D.I.Shcherbakovym.
(Siberia, Eastern--Strüverite)

SITNIN, A.A.; LENONOVA, T.N.

Loparite, a new accessory mineral of albitized and greisenized granites. Dokl. AN SSSR 140 no.6:1407-1410 O '61. (MIRA 14:11)

1. Institut mineralogii, geokhimii i kristallokhimii redkikh elementov AN SSSR. Predstavleno akademikom D.I.Shcherbakovym.
(Siberia, Eastern--Loparite) (Granite)

BEUS, A.A., doktor geol.-miner. nauk; SEVEROV, E.A.; SITNIN, A.A.; SUBBOTIN, K.D.; SERDYUCHENKO, D.P., doktor geol.-miner. nauk, otv. red.; GRISHINA, T.B., red.izd-va; POLYAKOVA, T.V., tekhn. red.

[Albitized and greisenized granites (apogamites)] Al'bitizirovannye i greizenizirovannye granity (apogranity). Moskva, Izd-vo Akad. nauk SSSR, 1962. 195 p. (MIRA 16:2)

1. Laboratoriya geokhimii metasomaticheskikh protsessov, svyazannykh s granitoidami Instituta mineralogii, geokhimii i kristallokhimii redkikh elementov (for Beus, Severov, Sitnin, Subbotin).

(Granite) (Trace elements)

SITNIN, A.A.; BYKOVA, A.V.

First find of microlite in granites. Dokl. AN SSSR 147 no.1:203-206 N '62. (MIRA 15:11)

1. Institut mineralogii, geokhimi i kristallokhimii redkikh elementov. Predstavleno akademikom D.I. Shcherbakovym. (Microlite)

SITNIN, A.A.; RAZINA, I.S.

Chemical composition of lithium micas from methasomatically altered granites. Geokhimiia no.7:695-699 Jl '63. (MIRA 16:9)

1. Institut mineralogii, geokhimii i kristallokhimii redkikh elementov, Moskva.
(Siberia, Western--Mica--Analysis) (Metasomatism)

BEUS, A.A., doktor geol.-miner. nauk; MECHAYEVA, I.A.; POLKOPIN, F.D.; PREMYSLER, K.M.; CHUBINOV, Yu.V.; SITNIN, A.A.

[Albitized and greisenized granites, a new prospective type of rare element deposits] Al'bitizirovannye i greizenizirovannye granity - novyi perspektivnyi tip mestorozhdenii redkikh elementov. Moskva, 1961. 33 p. (MIRA 17:8)

1. Akademiya nauk SSSR. Institut mineralogii, geokhimii i kristallokhimii redkikh elementov. 2. Institut mineralogii, geokhimii i kristallokhimii redkikh elementov AN SSSR (for Beus, Sitnin). 3. Geologorazvedochnyy trest No.1 Ministerstva geologii i okhrany nedr SSSR (for Mechayeva, Polkopin, Premysler).

SOV/97-59-1-11/18

AUTHORS: Mordovina, A.N., Candidate of Technical Sciences; Godunov, B.I., Engineer, and Sitnin, O.V., Engineer.

TITLE: Precast Reinforced Concrete Used for Floors in the Under-Water Parts of Hydroelectric Power Stations (Sbornyy zhelezobeton v perekrytiyakh podvodnoy chasti gidro-elektrostantsiy)

PERIODICAL: Beton i Zhelezobeton, 1959, Nr 1, pp 36-39 (USSR)

ABSTRACT: Prestressed reinforced concrete load-carrying floor beams were used for the construction of the Volga Hydroelectric Power Station (see B.V. Yakubovskiy's articles in Beton i Zhelezobeton, 1956, Nr 6 and 1957, Nr 12). The advantage of this construction is that no timber shuttering is required. The Gidroproyekt in the construction of Stalingrad Hydro-electric Power Station designed and used with advantage pre-cast-monolithic floors together with load-carrying reinforced concrete units. Cross-sections of these load-carrying beams are shown in Figs.1, 2 and 3. The beams are positioned 4 - 6 cm apart to allow for subsequent concreting of joints.

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Precast Reinforced Concrete Used for Floors in the Under-Water Parts of Hydroelectric Power Stations

Precast floor slabs, used for aqueducts and suction pipes, are cast in metal formwork and cured in curing chambers. The units of the spiral chamber are cast on the concreting yard. Concrete Mark 250, and reinforcement of steel Marks St.5 and St.3 were used. The precast reinforced concrete beams are of inverted "T" cross-section. Their height differs according to span as follows: 11-12 m span, 50-60 cm high: 9-10 m, 45-50 cm: 8-7 m, 35-45 cm: 7-6 m, 30-40 cm. Fig.2 shows the floor construction of the spiral chamber and Fig.3 the construction of the floor of aquaducts of the Stalingrad Hydroelectric Power Station. Experience has shown that in the case of spans bigger than 7 m the floor units should be doubly reinforced. Fig.4 illustrates assembly of the floor of the spiral chamber of the Stalindrad Hydroelectric Power Station. The load-carrying units were calculated for a superimposed load of 1.1-1.2 m thick concrete topping. The cracks of the load-carrying elements are between 0.1 and 0.2 mm wide. The

 magnitude of deflection, in the case of construction spanning

Precast Reinforced Concrete Used for Floors in the Under-Water Parts of Hydroelectric Power Stations

10.7 m with 1-1.2 m thick concrete topping, was 2.5 cm.. There are 4 figures.

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SITNIN, V.

Economics - Congresses

International economic conference, Den. i kred., No. 3, 1952.

Monthly List of Russian Accessions, Library of Congress, July 1952. Unclassified.

SITNIN, V.K., redaktor; CHIZHOV, K.Ya., redaktor; LEBEDEV, A., tekhnicheskiy redaktor.

[Finance and credit of the people's democracies] Finansy i kredit stran narodnoi demokratii. Moskva, Gosfinizdat, 1954. 159 p. (MLRA 8:4)
(Europe, Eastern--Finance) (China--Finance)

USOSKIN,M.; SITNIN,V., redaktor; LOGOVINSKAYA,R., redaktor; DENISOVA,O., tekhnicheskiy redaktor

[Short-term credit in the U.S.S.R.] Kratkosrochnyi kredit v SSSR. Moskva, Gosfinizdat, 1955. 107 p. (MLRA 9:2)
(Banks and banking) (Russia--Credit)

GUSAKOV,A.; DYMSHITS,I.; SITNIN,V., redaktor; FILIPPOVA,E., redaktor; DENISOVA,O., tekhnicheskiy redaktor

[Currency circulation and credit in the U.S.S.R.] Denezhnoe obrashchenie i kredit SSSR. Moskva, Gosfinizdat, 1955. 355 p. (Banks and banking) (Credit) (Money) (MLRA 9:2)

SITNIN, V.

Problems in the organization and employment of working capital in industry. Fin.SSR. 16 no.1:18-25 Ja '56. (MLRA 9:5)
(Finance)

SITNIN, V.; SLAVNYY, I.

The organization of payments in the national economy. Fin.SSSR 17 no.3:32-38 Mr '56. (Clearinghouse) (MIRA 9:7)

SITNIN, Vladimir Kasnofontovich; BATYREV, V., otvetstvennyy red.; LOGOVINSKAYA, R., red.izd-va; LEBEDEV, A., tekhn.red.

[Money and currency circulation in the U.S.S.R.] Den'gi i denezhnoe obrashchenie v SSSR. Moskva, Gosfinizdat, 1957. 61 p. (MIRA 11:1)

(Money)

SITNIN, V.; SLAVNYY, I.

Interrelationship between the budget and credit. Fin. SSSR 18 no.2:18-26 F '57. (MLRA 10:5)
(Budget) (Credit)

SITNIN, Vladimir Ksenofontovich, kand. ekon. nauk; KURINA, Ye.A., red.; TROFIMOV, A.V., tekhn. red.

[Financial system of the U.S.S.R.] Finansovaia sistema SSSR. Moskva, Izd-vo "Znanie," 1958. 30 p. (Vsesoiuznoe obshchestvo po rasprostraneniiu politicheskikh i nauchnykh znanii. Ser.3, no.16). (MIRA 11:9)
(Finance) (Budget)

ZLOBIN, Ivan Danilovich, prof.; SITNIN, V.K., nauchnyy red.; KURINA, Ye.A., red.; TROFIMOV, A.V., tekhn.red.

[Credit and the credit system of the U.S.S.R.] Kredit i kreditnaia sistema SSSR. Moskva, Izd-vo "Znanie," 1958. 39 p. (Vsesoiuznoe obshchestvo po rasprostraneniiu politicheskikh i nauchnykh znanii. Ser. 3, no.11) (MIRA 11:5)
(Credit)

RUBINSHTEYN, Yakov Yevseyevich,; SITNIN, V., otv. red.; LITUNOVSKAYA, M., red. izd-va,; LEBEDEV, A., tekhn. red.

[Organization and development of Soviet credit] Ocherki organizatsii i razvitiia sovetskogo kredita. Moskva, Gosfinizdat, 1958. 254 p. (MIRA 11:11)

(Credit)

BACHURIN, Aleksandr Vasil'yevich; SITNIN, V.K.; TOLYPINA, O., red.; LEBEDEV, A., tekhn.red.

[Finance and credit in the U.S.S.R.; a collection] Avtorskii kollektiv pod rukovodstvom A.V.Bachurina. Izd.2., dop. i perer. Moskva, Gosfinizdat, 1958. 339 p. (MIRA 12:4)
(Finance) (Credit)

SITNIN, V.

Business accounting problems. Den. i kred. 16 no.12:14-21 D '58. (MIRA 11:12)
(Russia--Industries) (Banks and banking)

BATYREV, Vladimir Mikhaylovich; SITNIN, V.K., otv.red.; ZAVERNYAYEVA, L., red.izd-va; SUBBOTINA, K., red.izd-va; TELEGINA, T., tekhn.red.

[Currency circulation in the U.S.S.R.; problems in theory, organization and planning] Denezhnoe obrashchenie v SSSR; voprosy teorii, organizatsii i planirovaniia. Moskva, Gosfinizdat, 1959. 379 p. (MIRA 13:4)
(Money)

SITNIN, V.

New developments in planning currency circulation. Fin.SSSR 20 no.4:20-28 Ap '59. (MIRA 12:6)
(Money)

KOMISSAROV, Vasiliy Pavlovich; POPOV, Andrey Nikolayevich; SITNIN, V.K., red.; BUDARINA, V., red.; KOROLEVA, A., mladshiy red.; CHERKELEVA, O., tekhn.red.

[Money, credit and finance of the European people's democracies] Den'gi, kredit i finansy evropeiskikh stran narodnoi demokratii. Pod red. B.K.Sitnina. Moskva, Izd-vo sotsial'no-ekon.lit-ry, 1960. 237 p. (MIRA 14:1)
(Europe, Eastern--Finance)

SITNIN, V.K., red.; BARNGOL'TS, S.B., red.; BYCHKOV, P.S., red.; MARGULIS, A.Sh., red.; METT, G.Ya., dots., red.; KAZANTSEV, A.I., red.; SYCHEV, N.G., red.

[Organization and methods for the economic analysis of the work of enterprises; transactions] Organizatsiia i metody ekonomicheskogo analiza raboty predpriiatii; trudy. Moskva, Gosfinizdat, 1963. 663 p. (MIRA 17:4)

1. Vsesoyuznoye nauchno-tekhnicheskoye soveshchaniye po organizatsii i metodike ekonomicheskogo analiza raboty promyshlennykh predpriyatiy. 1st, Moscow, 1963. 2. Predsedatel' Komiteta ekonomiki i organizatsii proizvodstva tsentral'nogo pravleniya Nauchno-tekhnicheskogo obshchestva mashinostroitel'noy promyshlennosti (for Mett).

SITNIN, V.

Account more fully for potentials in the draft budget for 1964 - 1965. Fin. SSSR 37 no.8:8-14 Ag '63. (MIRA 16:9)

1. Zamestitel' ministra finansov SSSR.
(Industrial management) (Budget)

LITNIN, V.K.

Coordinate standardization and finances. Standartizatsiia 28 no.10:40 O '64. (MIRA 17:12)

1. Pervyy zamestitel' Ministra finansov SSSR.

SITNITSA, I.

Rubber plants

Invormer marshes. Mol. kolkh. 19 no. 6, 1952

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SITNITS'KA, I.G. [Sytnyts'ka, I.H.], kand.med.nauk.;TSAREVSKA, P.M.

Clinical picture of celiac disease. Ped., akush. i gin. 25 no.1:22-23 '63. (MIRA 16:5)

1. Druga likarnya Moskovs'kogo rayonu m. Kiyeva(golovniy likar A.O.Rudik [A.O.Rudyk]).
(CELIAC DISEASE)

SITNITSKAIA, I. G.

Malaria in infants and young children following blood transfusion. Pediatriia, Moskva No. 4, July-Aug. 50. p. 16-9

1. Of the Clinic of Faculty Pediatrics (Head of Department—Prof. V. G. Balaban), Kiev Order of Red Banner of Labor Medical Institute imeni Academician A. A. Bogomolets, Kiev.

CIML 19, 5, Nov., 1950

SITNITSKAYA, I.G. [Sytnyts'ka, I.H.], kand.med.nauk; ZAKHARCHENKO, O.G. [Zakharchenko, O.H.]

Clinical characteristics of hemorrhagic vasculitis in children. Ped., akush. i gin. 22 no.6:24-27 '60. (MIRA 14:10)

1. Detskaya bol'nitsa (glavnyy vrach - I.S.Kolomiyskiy [Kolomyis'kyi, I.S.]), Kirovograd.
(PURPURA (PATHOLOGY)) (CHILDREN--DISEASES)

SITNITSKAYA, I.G. [Sytnyts'ka, I.H.], kand.med.nauk

Etiology of chronic abdominal pains in children. Ped., akush. i gin. 23 no.3:11-14 '61. (MIRA 15:4)

1. 2-ya bol'nitsa Moskovskogo rayona Kiyeva (glavnyy vrach - I.S. Suprunenko).
(BILE DUCTS--DISEASES) (DIGESTIVE ORGANS--DISEASES)

GOKHSHTEYN, V.P., inzh.; SITNITSKIY, I.R., inzh.

New stonecutting units for working high terraces. Stroi.i dor.mashinostr. 5 no.3:7-10 Mr '60. (MIRA 13:6)
(Quarries and quarrying--equipment and supplies)

SITNITSKIY, I.R., inzh.

Machine for obtaining clay by cutting. Stroi.i dor.mash. 7 no.10:23-25 O '62. (MIRA 15:11)
(Clay) (Excavating machinery)

SITNITSKIY, I.R., inzh.

Set of mechanisms for mechanizing removal operations in the PKB-02--04 stonecutting unit. Stroi. i dor. mash. 8 no.1: 19-20 Ja '63. (MIRA 18:5)

SITNITSKIY, I.R., inzh.

SM-823 (PKB-34A) electrical tow car. Stroi. mat. 9 no.7: 24-25 Jl '63. (MIRA 16:11)

SITNITSKIY, I.R., inzh.

The 291 formwork for making two-way curved reinforced concrete panels. Stroi. i dor. mash. 9 no.6:29-32 Je '64. (MIRA 18:11)

AUTHOR: Sitnitskyy, Ya.I. 102-58-1-9/12

TITLE: Dynamic Characteristics of Rate Thermocouples (Dynamichni kharakterystyky shvydkisnykh termopar)

PERIODICAL: Avtomatika (Kiyev), 1958, Nr 1, pp 85 - 93 (Ukrainian SSR)

ABSTRACT: The two thermocouples in these rate devices are of identical static characteristics, but have different response time T_1 and T_2; the combination can be considered as two aperiodic circuits of differing time-constants in parallel. The drawn-up differential equations, (2) and (3), differ from those for an ideal differentiator by containing the first and second derivatives of the output; the action is therefore not that of an ideal differentiator and wide deviations from correct action can occur in certain circumstances. The amplitude- and phase-frequency characteristics are deduced in the standard operational calculus fashion, Eqs.(7) and (8); Figure 1 shows Eq.(7) in graphic form. Using these results, the upper bound to the permissible operating frequency is found, as $(T_1T_2)^{-1/2}$; the optimum frequency (frequency at which the sensitivity is maximal) is about 0.4 times the upper bound. The time-constant of the couples should be chosen to

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give an optimum frequency lying in about the region of the most probable frequency in the system. The article concludes with some rather general experimental results for a rate couple with T_1 = 0.2 min and T_2 = 1.8 min ; the agreement with theory is quite good.
There are 3 figures and 8 Soviet references.

ASSOCIATION: L'vivs'kyy politekhnichnyy instytut
(Lvov Polytechnical Institute)

SUBMITTED: December 29, 1956

SOV/96-58-9-5/21

AUTHOR: Sitnitskiy, Yu. I., Candidate of Technical Science

TITLE: An Investigation of Velocity Thermo-couples as a Correcting Link in a System for the Automatic Control of Superheated Steam (Issledovaniye skorostnoy termopary kak korrektiruyushchego zvena sistemy avtomaticheskogo regulirovaniya temperatury peregretogo para)

PERIODICAL: Teploenergetika, 1958, Nr 9, pp 30 - 33 (USSR)

ABSTRACT: A velocity thermo-couple consists of two thermo-couples, of the same material but different thermal inertia, connected back-to-back. They are used for automatic control of superheated steam temperature because it is considered that their e.m.f. is proportional to the rate of change of temperature. A mathematical expression is derived from which it is shown that the e.m.f. is indeed a function of the rate of temperature change and depends on the time-constants of the constituent thermo-couples. The left-hand side of the equation contains the second differential coefficient of e.m.f. which means that the velocity thermo-couple itself has some inertia. The problem then arises of determining the optimum time-constants of the two constituent thermo-couples.

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Expressions are given for the amplitude-frequency and phase characteristics of the thermo-couple in terms of the time-constant. The amplitude-phase characteristics of a velocity thermo-couple calculated for various ratios of time-constant are plotted in Fig 1 and are a family of circles. The requisite values of the time-constants depend on the frequency range to be covered by the control system. It follows from formula 11 that in order to increase the limiting frequency the product of the two time-constants must be reduced, but they must differ sufficiently to ensure an adequate e.m.f. A suitable choice may be based on equation 15. As there is at present no theoretical way of calculating the time-constants of thermo-couples, they must be determined experimentally. The construction of industrial velocity thermo-couples is usually such that the component thermo-couples cannot be separated from one another for deterlination of their individual time-constants.

Card 2/4 Therefore, the author has developed a new procedure making the determination by analysis of the transient performance

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of a velocity thermo-couple. To determine simultaneously the time constants of each of the components the thermo-couple is connected to a low-inertia recording potentiometer and rapidly introduced into a medium of different temperature. By the shape of the trace, together with formula given in the article, the time-constants of the individual thermo-couple are easily determined. The results of experimental determinations of the frequency characteristics of velocity thermo-couples given in Fig 3 confirm the theoretical conclusions, and in particular the existence of a limiting frequency beyond which the amplitude reaches a maximum and the phase-angle changes sign. The procedure was checked by making separate

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determinations of the inertia of each of the component thermo-couples and good agreement was found.

There are 3 figures, 4 Soviet references.

ASSOCIATION: L'vovskiy Politekhnicheskiy Institut (L'vov Polytechnical Institute)

1. Steam--Control 2. Thermocouples--Applications 3. Thermocouples --Properties 4. Thermocouples--Construction

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41205

S/194/62/000/007/036/160
D295/D308

AUTHOR: Sitnitskiy, Yu.I.

TITLE: Dynamic characteristics of high-speed thermocouples

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 7, 1962, abstract 7-2-63 ye (Nauchn. zap., L'vovsk. politekhn. in-t, no. 60, 1960, 36 - 48)

TEXT: An analysis of the differential equation and of the frequency characteristics of a high-speed thermocouple, considered as two aperiodic stages connected in parallel, is used to show that the thermocouple does not always act as a differentiating stage. In order to obtain the maximum effect when a high-speed thermocouple is used, it is necessary that the time constants of both its layers have values chosen in accordance with the frequencies expected in the serve system. In general the time constant of the junction with little inertia must be a minimum, while the time constant of the junction having inertia must exceed the first one by 2 - 3 times. The theoretical calculations have been subjected to experimental

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ANDRIYEVSKIY, A.I.; ANTANOVICH, A.V.; BOGATYREV, N.A.; GLUSHCHENKO, I.P.; GUBENKO, T.P.; ZAMORA, Ye.F.; KARANDEYEV, K.B.; LUKIN, V.I.; LUKIN, N.I.; MAKSIMOVICH, N.G.; MOZER, V.F.; PETRENKO, S.I.; PAPERNYY, Ye.A.; PRIVALOVA, K.A.; SITNITSKIY, Yu.I.; STASIKOV, Ya.T.; SHCHERBAKEVICH, B.P.; CHUCHMAN, T.S.; YAGELLO, I.M.; BRILINSKIY, B.M. i dr.

G.E. Krushel'; obituary. Izv.vys.ucheb.zav.; energ. no.10:147 O '58. (MIRA 11:12)

(Krushel', Georgii Evgen'evich, 1912-1958)

L 9629-66 EWT(1)/EWA(h)/ETC(m) WW

ACC NR: AP6000038

SOURCE CODE: UR/0115/65/000/010/0061/0062

AUTHOR: Brailov, E. S.; Brodin, I. S.; Sitnitskiy, Yu. I.; Chuchman, T. S.

ORG: None

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53
B

TITLE: Improving the accuracy of a gas rotation meter

SOURCE: Izmeritel'naya tekhnika, no. 10, 1965, 61-62

TOPIC TAGS: gas flow, flow meter, measuring instrument, error

25 9m

ABSTRACT: One of the main disadvantages of gas rotation meters, especially in research applications, is the considerable error (± 2%) of industrially manufactured devices. The authors present the results of a study which is directed toward the improvement of the accuracy of such meters. The main cause of error is the overflow of gas through gaps between the moving rotors and the walls of the housing, depending on the pressure drop at the meter. The latter, in turn, depends on the flow rate. Hence, a mode of operation in which the pressure drop at the meter equals zero should eliminate or substantially reduce the error. In order to achieve this the rotors should be powered not by the energy obtained from the gas being measured, but from an external source. With this purpose, the authors designed and tested an automatic system which maintains zero pressure drop in a gas rotation meter (Fig. 1). Tests show that, in spite of large inertia of the rotors of a (RS-400) gas meter, the transfer process in the system does not exceed 30 sec. The work was per-

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UDC 681.122

Card 2/2

AP6[illegible] SOURCE CODE: UR/0000/66/000/002/0109/0114

AUTHOR: [illegible], V. M. (Aspirant); Sitnitskiy, Yu. I. (Candidate of technical sciences; Docent)

ORG: none

TITLE: Measurement of liquid and gas flow rates by local heating of the boundary layer

SOURCE: Lvov. Politekhnicheskiy institut. Kontrol'no-izmeritel'naya tekhnika (Control and measurement techniques), no. 2. Lvov, Izd-vo L'vov. univ., 1966, 109-114

TOPIC TAGS: gas flow, flow meter, rheometer, flow rate

ABSTRACT: A fluid flow meter has been developed whose operation is based on the maintenance of a constant temperature gradient across the boundary layer on a cylinder placed in the flow; the temperature gradient is kept constant by changing the input to a heater in the cylinder in response to temperature changes inside the cylinder. The cylinder contains resistance thermometers and an the electric heater whose power consumption is measured. This type of flow meter is useful in that is measures the mass velocity, and therefore, the measured values do not depend on the temperature and pressure of the medium which is particularly important for gases. The flow meter can be easily modified for automatic operation by installing an automatic control of the heater power in response to the input from the resistance thermometers. The linear

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ACC NR: AT6031912

characteristic of the meter also permit its use in pulsating flows. The meter, tested in air stream, does not cause any pressure losses. Orig. art. has: 4 figures and 14 formulas.

SUB CODE: 20,14/ SUBM DATE: 25Mar66/ ORIG REF: 005

Card 2/2

SITNOV M. A.

Morgullis L. S., Sitnov M. A. And Shlyanov A. I., "Adjustment of Regulation of the AK-25-2 Steam Turbine at the Leningrad Metals Plant," Naladochnyye i eksperimental'nyye raboty ORGRES [Corrective and Experimental Work of the ORGRES], 1953, No 6, Pages 47-55.

SITNOV, Yu.N.; STAKHURSKIY, A.Ye., red.; NOVOSEL'TSEVA, O.N., red. izd-va; SOKOLOVA, Ye.V., tekhn. red.

[Electrophone] Elektrofon. Moskva, Izd-vo "Detskii mir." No.1. 1961. 1 fold. l. (Prilozhenie k zhurnalu "IUnyi tekhnik," no.11(101)). No.2. 1961. 1 fold. l. (Prilozhenie k zhurnalu "IUnyi tekhnik," no.12(102)). (MIRA 14:7)

1. TSentral'naya stantsiya yunykh tekhnikov, Moscow.
(Musical instruments, Electronic)

AZARKH, D.N., inzh.; POPOVA, N.V.; MONAKHOVA, L.P.; SITNOVA, A.N.; STUPIN, A.K., red.; TIKHANOV, A.Ya., tekhn.red.; UVAROVA, A.F., tekhn.red.

[Pumps; catalog-reference book] Nasosy; katalog-spravochnik. Izd.3. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1959. 551 p. (MIRA 13:2)

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(Pumping machinery)

AZARKH, D.N., inzh.; SITNOVA, A.N.

[Piston-drive pumps; catalog-handbook] Porshnevye privodnye nasosy; katalog-spravochnik. Moskva, Mashinostroenie, 1965. 63 p. (MIRA 18:4)

1. Moscow. Vsesoyuznyy nauchno-issledovatel'skiy konstruktorskiy i tekhnologicheskiy institut gidromashinostroyeniya.